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skins and one elephant were also collected. A large number of birds was secured, including some of the rarest species. Many are game birds, among them guinea-fowls and francolins (which resemble our partridges), and plantain-eaters, crows, bustards, vultures, vulturine guinea-fowl, owls, hawks, kites, secretary birds, horn-bills, pigeons, parrots, sun-birds, flycatchers, etc., are represented. There are also four ostrich eggs.

The party remained in the field nearly a year, having sailed from New York for Mombasa on February 18, 1911, not dispersing until about February 15, 1912, at Nairobi. The territory traversed was mostly to the north and east of that covered by Colonel Roosevelt on the earlier Smithsonian expedition, and included the country lying between the northern part of British East Africa and southern Abyssinia.

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#### THE TWELFTH INTERNATIONAL GEOLOGICAL CONGRESS

THE International Geological Congress, on the joint invitation of the government of Canada, the provincial governments, the Department of Mines and the Canadian Mining Institute, will hold its twelfth meeting in Canada during the summer of 1913. It is proposed to hold the meeting in Toronto, beginning on or about the twenty-first day of August. The congress will continue in session for eight days.

The following topics have been selected by the executive committee as the principal subjects for discussion:

1. The coal resources of the world.
2. Differentiation in igneous magmas.
3. The influence of depth on the character of metaliferous deposits.
4. The origin and extent of the pre-Cambrian sedimentaries.
5. The subdivisions, correlation and terminology of the pre-Cambrian.
6. To what extent was the Ice Age broken by interglacial periods?
7. The physical and faunal characteristics of the Paleozoic seas with reference to the value of the recurrence of seas in establishing geologic systems.

The executive committee of the Eleventh Congress, held in Sweden, compiled and published a comprehensive report on the Iron Ore Resources of the World. The present executive committee has undertaken the preparation of a similar monograph on the Coal Resources of the World. In order to make the work as complete as possible the cooperation of all the principal countries of the world has been invited. This invitation has met with a cordial response, and it is hoped the volumes will be ready for distribution before the meeting so that they may constitute a basis for discussion at the congress.

Arrangements have been made for a series of excursions before, during and after the congress which will enable the members to gain a knowledge of the geology and physiography as well as the mineral resources of Canada.

The honorary president of the congress is the Duke of Connaught, governor general of the Dominion of Canada. The president is Dr. Frank D. Adams, dean of the faculty of applied science and Logan professor of geology, McGill University, Montreal, and the general secretary is Mr. R. W. Brock, director of the Geological Survey of Canada.

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#### SCIENTIFIC NOTES AND NEWS

AT the celebration of the seventy-fifth anniversary of the foundation of the University of Michigan on June 27, the degree of doctor of laws was conferred on Dr. Henry S. Carhart, professor of physics there from 1886 until his retirement in 1909 as emeritus professor. As already noted in *SCIENCE*, the degree of doctor of science has been conferred on Dr. Carhart by Northwestern University, where he was professor of physics from 1872 to 1886.

YALE UNIVERSITY has conferred the degree of doctor of science on Professor H. T. Eddy, dean of the graduate school of the University of Minnesota. Professor Eddy, who is president of Sigma Xi, gave one of the addresses of the joint meeting of the members of the societies of Phi Beta Kappa and Sigma Xi.

THE University of Pittsburgh has conferred the degree of doctor of laws on President E. F. Nichols, president of Dartmouth College, and on Dr. Charles D. Walcott, secretary of the Smithsonian Institution.

DR. LEWIS BOSS, director of Dudley Observatory, has received the doctorate of science from Dartmouth College.

THE University of Colorado conferred the degree of doctor of laws on Dr. Florian Cajori, professor of mathematics in Colorado College.

THE Royal Society of Edinburgh has awarded to Professor Alexander Smith, professor of chemistry in Columbia University, the Keith Prize for the biennial period 1909-1911. The award is made for his researches upon sulphur and upon vapor pressure, which have been published in the *Journal* of the American Chemical Society.

THE Franklin Institute of Philadelphia, Pa., has awarded the Edward Longstreth medal of merit and diploma to Dr. Charles Baskerville, professor of chemistry and director of the laboratory at the College of the City of New York, for his investigations on the chemistry of anesthetics (ethyl ether, chloroform, nitrous oxide and oxygen).

ACCORDING to *Nature* the list of honors on the occasion of King George's birthday, which was celebrated on June 14, includes the name of only one fellow of the Royal Society, Lieut.-Col. D. Prain, director of the Royal Gardens, Kew, who has been knighted. Among others upon whom a like honor has been conferred are Mr. E. G. A. Moynihan, professor of clinical surgery at the University of Leeds; Mr. C. H. Read, president of the Society of Antiquaries; Mr. J. Bland Sutton, the distinguished surgeon; Dr. St. Clair Thomson, professor of laryngology and diseases of the throat at King's College Hospital. Another honored member of the medical profession is Mr. R. J. Godlee, president of the Royal College of Surgeons, who has been created a baronet. The Companions of the Order of St. Michael and St. George (C.M.G.) include Dr. A. Balfour, director of the Government Research Labora-

tory, Gordon Memorial College, Khartoum; Mr. J. Currie, principal of the same college, and Mr. J. M. Macoun, assistant botanist and naturalist, Canadian Geological Survey. Dr. G. A. Grierson and Dr. M. A. Stein have been appointed Knight Commanders of the Order of the Indian Empire (K.C.I.E.), and among the new Companions of the same Order (C.I.E) are Mr. B. Coventry, director of the Indian Agricultural Research Institute; Mr. A. Chatterton, superintendent of industrial education, Madras, and Dr. P. C. Ray, professor of chemistry, Presidency College, Calcutta.

DR. C. J. MARTIN, F.R.S., director of the Lister Institute of Preventive Medicine, London, has been elected an honorary member of the Royal Society of New South Wales.

DR. W. W. CAMPBELL, director of the Lick Observatory, expects to visit the D. O. Mills Observatory at Santiago, Chili, which is under his charge. Mr. Ogden Mills will continue to maintain the observatory for 1913 and 1914.

DR. CHARLES D. WALCOTT, secretary of the Smithsonian Institution, has left Washington for British Columbia, where he will continue his studies in Cambrian geology and paleontology.

DR. SIMON FLEXNER, director of the laboratories of the Rockefeller Institute for Medical Research, who went abroad last February to give lectures at the Edinburgh University and the Royal Institute of Public Health, London, has returned to New York.

DR. G. PATTERSON, JR., assistant professor of chemistry in the University of Notre Dame, has accepted a position with the government of the Republic of Panama and will sail from New York to take charge of his duties some time this summer.

MR. HOWLAND BANCROFT has resigned from the U. S. Geological Survey, with which he has been connected since 1907, and will enter practise as a consulting mining geologist.

DR. F. E. LLOYD, professor elect of botany in McGill University, will spend a portion of the summer at the Carnegie Institution of Wash-

ington Botanical Laboratories at Carmel, Cal., and Tucson, Ariz., continuing his investigations of transpiration in cotton and other, chiefly halophytic, plants.

MR. N. BANKS, Bureau of Entomology, has gone to Europe to spend a few months studying in various museums.

At the Worcester Polytechnic Institute a fund has been established to be called the Leonard P. Kinnicutt Student Loan Fund, with certain sums of money left after the discontinuance of Newton Hall, for eight years the institute dormitory on State St. Dr. Kinnicutt, while professor of chemistry, was chairman of the faculty committee in charge of the dormitory, and was always active in helping students financially and in other ways.

A MEMORIAL service in honor of Robert Koch was recently held in a temple dedicated to him, which has been erected at Tokyo. The temple owes its origin to the interest of Professor Kitasato.

WE learn from *Nature* that Lady Hooker will be grateful if any of her friends who possess letters written by her late husband, Sir Joseph Hooker, will lend them to her for the purposes of a biography which Messrs. Smith, Elder and Co. will publish. The letters, which should be forwarded to Lady Hooker at The Camp, Sunningdale, will be carefully returned.

THE death occurred on June 13 of Dr. Shadworth H. Hodgson, the eminent British philosopher, at the age of seventy-nine years.

M. F. LECOQ DE BOIS-BAUDRAN, the French chemist, has died at the age of seventy-four years. The Davy medal of the Royal Society was awarded to him in 1879, for the discovery of gallium.

DR. KARL VON DER MÜHLL, professor of mathematical physics at Bâle, has died at the age of seventy-one years.

M. C. ANDRÉ, director of the Lyons Observatory, has died at seventy-two years of age.

THE death is also announced of Professor H. F. Weber, director of the Physical Electro-

technical Institute at Zurich, aged sixty-nine years.

THE twenty-third annual conference of the Museums Association will be held in Dublin on July 8-12, under the presidency of Count G. N. Plunkett, director of the National Museum of Ireland.

THE program for the meeting of the British Association at Dundee on September 4 and following days includes garden parties at Glamis Castle, Kinfauns Castle, Rossie Priory and Camperdown and excursions to St. Andrews, Dunfermline, Arbroath and Aviemore. The president, Dr. Schäfer, of Edinburgh University, will devote his address to the developments that have taken place during the last 50 years through the study of the tissues of the body by means of the microscope. Professor Bragg will discourse on "Radiations, Old and New," and Professor Keith on "The Antiquity of Man." The lord provost, magistrates and citizens of Dundee are cooperating with the officials of the association for the entertainment of the visitors. A hand-book on the city and its industries is in preparation.

THE plan of Professor Willis L. Moore, chief of the United States Weather Bureau, for the establishment of an international North Atlantic weather service has been agreed to by the committee of the Radio Telegraph Congress meeting at London. According to the plan as outlined by Professor Moore, a median line will be established through the North Atlantic. All ships on either side of the line must take a daily weather observation which will be sent by wireless telegraphy to other vessels and thus relayed to the American or European land stations. From these reports weather charts will be constructed and forwarded to the shipping at sea.

PROFESSOR W. H. PERKIN has read a paper before the Society of Chemical Industry, announcing that rubber has been synthesized, and that this synthetic rubber can be placed on the market at a price to compete with plantation rubber. According to the account

in *Nature* it was reported that Professor Fernbach, of the Pasteur Institute, was, after eighteen months of laborious work, able to produce a fermentation process for the production of fusel oil from any starchy material. The process is now so satisfactory that the higher alcohols can be obtained at a cost of not more than £30 per ton. Having produced isoprene cheaply, the next consideration was how to polymerize it and convert it into rubber satisfactorily. The discovery of the cheap method for preparing isoprene was first suggested by Dr. Matthews. In 1909 Mr. E. Halford Strange, of Messrs. Strange and Graham, technical research chemists, directed his organization of chemists, headed by Dr. Matthews, to the problem of the synthetic production of rubber. Dr. F. E. Matthews suggested one method for preparing isoprene in which acetone was one of the raw materials, and later on one in which fusel oil was the starting product. Professor Perkin was then asked to cooperate, and later on Sir William Ramsay joined the group as consultant. In July, 1910, Dr. Matthews left some metallic sodium in contact with isoprene, and on returning from his holidays in September found that the isoprene had turned into a solid mass of rubber. On further investigation it was found that sodium is a general polymerizing agent for this class of material. The first announcement of this discovery was made by Professor Carl Harries, of Germany, who had made the same discovery independently, about three months later.

PRESIDENT TAFT has just made considerable changes in the National Forests in Montana, Arizona, Nevada, Utah and California through presidential proclamations modifying the boundary lines. By these changes nearly 275,000 acres of land are eliminated from the forests, about 65,000 acres are added, and about 55,000 acres are transferred between two forests, while a new forest is created by the division of an old unit into two. The net result is to bring down the total gross area of the national forests to about 187,400,000 acres, of which nearly 27,000,000 acres are in Alaska. To a considerable extent, however, the reduc-

tions, so far as land actually owned by the government is concerned, are apparent rather than real, owing to heavy alienations in the tracts eliminated. Some 22,000,000 acres of the national forest gross area are not owned by the government. The high-water mark of the national forest gross area was reached in 1909, when the forest boundaries included over 194,000,000 acres. It was then realized, however, that in making the examinations on which the presidential proclamations creating the forests were based the work had been too rapid to insure in all cases the best boundaries. Sometimes land which should have been included was left out, while at other times land was taken in which was not best suited to forest purposes. Consequently a complete overhauling and rectification of the forest boundaries was planned, and has been going on ever since. By successive proclamations President Taft has eliminated nearly 11,000,000 acres, while he has added about 4,000,000 acres. In Montana, the new proclamations eliminate a total of 116,370 acres from six forests—the Custer, Absaroka, Blackfeet, Kootenai, Lewis and Clark and Flathead—while 14,640 acres are transferred from the Blackfeet to the Kootenai and 40,640 from the Kootenai to the Blackfeet, to facilitate administration. In Arizona, 106,540 acres are eliminated from the Coronado National Forest. In Nevada, 49,840 acres are eliminated from the Humboldt and 55,840 acres added, of which 12,800 acres are included in the new Ruby National Forest, composed principally of that part of the old Humboldt lying south of the Southern Pacific Railroad. In Utah, 1,340 acres are eliminated from the Sevier, while in California 8,680 acres are added to the Shasta and 480 acres to the Klamath.

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#### UNIVERSITY AND EDUCATIONAL NEWS

THE income of the Henry O. and Mary A. F. Hotchkiss bequest, which will eventually revert to the Sheffield Scientific School of Yale University, is to be apportioned for the purpose of adding to the salaries of those who